

Guarantees of Origin related to energy — Guarantees of Origin for Electricity

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Foreword

This document (JWG 2 WI JW002001) has been prepared by Technical Committee CEN/CENELEC/JWG 2 “Guarantees of Origin and Energy Certificates”, the secretariat of which is held by SIS.

This document is currently submitted to the CEN Enquiry.

Introduction

The objective for this European Standard is that it should contain standardisation of Guarantees of Origin in line with the relevant Directives and existing voluntary schemes with the aim to create a standardised GO that can be used for mainly disclosure/labelling and trading.

There is an increasing demand from the end customers' side regarding reliable accounting of the origin of energy production. There is also an obligation for electricity suppliers to provide reliable disclosure information to end customers. A standardised system for GOs can fulfil these requirements.

Standardisation of Guarantees of Origin will create a tool for fulfilling the requirements in the revised Renewable Energy Directive, the Electricity Market Directive and the Cogeneration Directive and to create a basis for further development of certification regarding the original electricity production. In this way a harmonised way to prove the origin of the electricity produced will be developed. These GOs can be used for trading and/or for disclosure/labelling of electricity. All member states shall recognise the GOs issued by other member states. Further, the system must be fraud-resistant and avoid double-counting. Therefore a European Standard for GOs for all member states is important. The content of the standard can, after necessary modifications, for example be applied to heating, cooling, and gas (including biogas). These modifications will not be included in this standard.

The elaboration and publication of European Standards will allow certification bodies to develop their activities on consensual and recognized practices and this will increase the credibility of the certificates they deliver.

Experiences of the AIB, Description of existing voluntary system (EECS)

The EECS Rules

The European Energy Certificate System (EECS) is a commercially funded, integrated European framework for issuing, holding, transferring and otherwise processing electronic records (EECS Certificates) certifying, in relation to specific quantities of output from power plants, attributes of its source and/or the method and quality of its production. The number of certificates issued to a power plant during a period will be directly proportional to the electricity produced by it during that period. These certificates guarantee the source of that electricity.

EECS is governed by rules (the EECS Rules) which secure, in a manner consistent with European Community law and relevant national laws, that systems operating within the EECS framework are reliable, secure and inter-operable. The implementation, under the EECS Rules, of harmonised standards for issuing and processing EECS Certificates enables the owners of EECS Certificates to transfer them to other account holders at both the domestic and international level.

The EECS Rules set out the obligations of AIB members in connection with their membership. The AIB governs the EECS Rules, its members conducting reviews of each other's operations. Members' are responsible within set geographic "domains" for overseeing their customers' compliance with these rules. The EECS Rules harmonise the creation, maintenance, transfer, cancellation and other processing of EECS Certificates; setting requirements for member participation.

EECS Certificates may be eligible as Guarantees of Origin issued pursuant to European Community legislation as implemented by member states; or in connection with other legislative certification schemes or under other, entirely voluntary, arrangements. To become a member of an individual EECS Scheme, the relevant provisions applicable in that member's domain must satisfy the requirements of the EECS Rules, including legislative and administrative arrangements for the issue of such certificates. Each member produces a domain protocol, which legislative provisions to ensure that the EECS Rules are satisfied.

Account holders are not bound by the EECS Rules, but by the legislation to their domain.

Registration of production devices

EECS Certificates can only be issued to the owners of power plants that have successfully registered within a domain. To apply for registration under EECS, the owner of the power plant must provide information about themselves and the power plant, including the technology and energy sources, commissioning dates and capacities, details of any public support that has been received, details of the arrangements for measuring energy sources and produced electricity, including any production auxiliaries, pumping stations and on-site demand. Registration requires the power plant to comply with both the law and with EECS, members being permitted to conduct physical inspections where necessary.

Issuing of EECS Certificates

Once a power plant has been registered, then it can receive EECS Certificates. The produced electricity, along with any fuels used, may only be measured by an approved body. The EECS Certificates may only be traded for electricity supplied to the grid, nett of electricity used by production Auxiliaries or for pumping water back to the header lake in pumped storage facilities. Certificates for electricity used by production auxiliaries, pumping and on-site demand are automatically cancelled upon issue.

Use of EECS Certificates

Certification of the quality of electricity and the method of its production provides an efficient mechanism for accounting for: the quality and method of production, as supplied to consumers; progress towards targets for the use of certain technologies; and production and/or consumption for stimulating investment in certain categories of plant. Certification enables specific types of electricity to be given a value; which can be traded separate to the physical electricity. For this to work effectively, producers, traders, suppliers, consumers, NGOs and governments must be sure that the certificates provide reliable evidence of the qualities to which they relate. EECS ensures that users have confidence in the EECS certificates issued and processed by AIB members.

Life cycle

The life cycle of an EECS Certificate encompasses: issuance, transfer and cancellation. EECS Certificates are issued on registries operated by AIB members for electricity by power plant registered in connection with national legislation or otherwise under EECS. They may be transferred from the producer's account to that of a trader and so on; either within the country of origin or to other EECS registries across Europe. EECS certificate may be cancelled and removed from circulation when the value of the certificate is realised, and may be used to adjust the residual mix for that domain. EECS Certificate may be cancelled by consumers in recognition of the qualities they represent; to qualify for financial incentives from government; or to discharge contractual or legal obligations. EECS Certificates may also be withdrawn from circulation where they have been issued in error; or expired (automatically cancelled), if they remain transferrable after a set period.

1 Scope

This European Standard specifies requirements for Guarantees of Origin of electricity from all energy sources. This standard will establish the relevant terminology and definitions, requirements for registration, issuing, transferring and Cancellation in line with the Directives RES, Cogeneration and electricity market. This standard will also cover measuring methods and auditing procedures.

These Guarantees of Origin may be traded and/or used for Disclosure/Labelling.

The content of this standard can, after necessary modifications, for example be applied to heating, cooling, and gas (including biogas). These modifications are not part of this standard.

This European Standard **will not** establish any sustainability criteria, this work is done elsewhere.

This standard is suitable for certification purposes.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

prEN 16247-1, *Energy Audits — Part 1: General requirements*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

Account Holder

person or organisation in respect of whom a Transferables Account or a Cancellation Account is maintained on a Registration Database

3.2

Affiliate

shall have the meaning assigned by the expression “related undertaking” by the IEM Directive

3.3

Alteration

correction by the Competent Body of any data of a GO in case that an error is introduced upon issuing of the GO or in the course of the processing of the GO

3.4

Auxiliaries

any item of the plant and/or apparatus not directly a part of an EGI but required for the functional operation of that EGI

3.5

Approved Measurement Body

person or organisation that is responsible for collecting and determining (on behalf of the Registrant) measured values of the Import and Export Meters of an EGI, and which has been approved by a Competent Body to measure Electrical Energy

- 3.6**
Cancel
to use a GO for purposes of Disclosure and prevent it from being transferred to another account
- 3.7**
Cancellation Account
record on a Registration Database concerning Cancelled GOs and relating to a particular person or organisation
- 3.8**
Cancellation Statement
electronic or printed receipt which provides evidence to a National GO Scheme Participant of the attributes at the time of Cancellation of one or more GOs and is not transferrable to any other National GO Scheme Participant
- 3.9**
Cancelling Body
body which cancels GOs in order to prevent their further transfer between National GO Scheme Participants
- 3.10**
Cogeneration
simultaneous generation in one process of thermal energy and electrical and/or mechanical energy
- 3.11**
Cogeneration Directive
Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on the promotion of Cogeneration based on a Useful Heat demand in the internal energy market and amending Directive 92/42/EEC
- 3.12**
Competent Body
the body duly authorised under the laws and regulations of any state (and, as the case may be, region) to exercise or discharge any legislative, governmental, regulatory or administrative function associated with the administration of a National GO Scheme
- 3.13**
Competent Body's Agent
person or organisation engaged by the Competent Body to perform on its behalf any of its obligations relating to the administration of GOs
- 3.14**
Consumption Declaration
declaration with respect to the Inputs of an EGI (including the Electrical Energy used in storing energy to be used by that EGI)
- 3.15**
Disclosure
the process whereby a supplier provides to its customers information about Electrical Energy that has been supplied to them, as directed by Article 3.9 of the IEM Directive
- 3.16**
Domain
geographic area containing EGIs with respect to which a Competent Body is responsible for issuing GOs
- 3.17**
Electrical Energy (Electricity)
energy made available by the flow of electric charge through a conductor

3.18**Electricity Generation Installation (EGI)**

separately measured device or group of devices that produces Output

3.19**Energy Input Factor**

the proportion (expressed as a factor of less than one) of the Nett Electrical Energy Generation of an EGI which is from a single type of Input, as specified in the GO Issuing Request for the period over which Electrical Energy has been generated for that EGI and single type of Input

3.20**Expiry**

a GO may Expire as a consequence of the passage of a given period of time since the Issue of a GO or since the production of the associated Electrical Energy

NOTE In Expiring a GO, the Competent Body on whose Registration Database the GO resides prevents the transfer of this GO to another Transferables Account and the Cancellation of such a GO by its holder.

3.21**Export Meter**

one or more devices and supporting arrangements for determining (in whole or in part) the quantity of Electrical Energy flowing from a EGI to a distribution or transmission system or to satisfy onsite demand

3.22**GO Issuing Request**

request by the authorised representative of an EGI to a Competent Body for the Issue of GOs in respect of that EGI and a specific period of time

3.23**Gross Electrical Energy**

the total annual Gross Electrical Energy production of a EGI; as evidenced by measured values collected and determined by an Approved Measurement Body with reference to its Import and Export Meters (adjusted by meter amendments and the outcome of any disputes)

3.24**Guarantee of Origin (GO)**

certificate Issued under a National GO Scheme with the Purpose of Disclosure

NOTE Guarantees of origin should be used within the framework of Labelling to designate the provider mix and - if a provider sells to an end-consumer with undertaking a product differentiation with a different energy mix (product mix) – also for a designation of the product mix.

3.25**High-Efficiency Cogeneration**

Cogeneration which meets the criteria of Annexes II and III of the Cogeneration Directive

3.26**IEM Directive**

the Internal Electricity Market Directive, being Directive 2009/72/EC (and its predecessor 2003/54/EC) of the European Parliament and of the Council

3.27**Import Meter**

one or more devices and supporting arrangements for determining (in whole or in part) the quantity of Electrical Energy flowing into an EGI from a distribution or transmission system or onsite production

3.28**Input**

amount of a specific type of energy or material goods consumed by a EGI in the production of Output

3.29

Issue

the process of creating (as a GO) a record in a Transferables Account in a Registration Database

3.30

Labelling

commercial process whereby a supplier provides to a customer detailed information about the supplied Electricity

3.31

Measurement Frequency

the frequency with which the Output of a EGI is measured

3.32

National GO Scheme

in relation to any Domain, the legislative, regulatory, administrative and contractual framework establishing a system of GOs in that Domain pursuant to the laws of the European Union

3.33

National GO Scheme Participant

Registrant of an EGI within the Domain to which a National GO Scheme relates and/or an Account Holder on the Registration Database established for the purposes of that National GO Scheme

3.34

Natural Flow

the flow of water which occurs either:

- without any pumping; or
- with pumping energy coming exclusively from on-site generated renewable sources

3.35

Nett Electrical Energy Generation

the Gross Electrical Energy production of a EGI minus the demand of any production Auxiliaries and minus losses in the main generator transformers on the site of the EGI

3.36

On-Site Demand

demand of Electricity taking place at the location of the generating plant, but for other purposes than Electricity generation (e.g. supplying of a paper mill, etc.)

3.37

Originating EGI

the EGI which produced the Output to which a GO relates

3.38

Output

amount of Electrical Energy yielded by a EGI and measured by an Approved Measurement Body in units of 1 MWh

3.39

Primary Energy Savings

Primary Energy Savings that can be attributed to the use of cogeneration technology, calculated according to Annexes II and III to the Cogeneration Directive

3.40

Production Auditor

Approved Body, independent of a Registrant, which has been appointed by the relevant Competent Body to examine the information provided by that Registrant in a GO Issuing Request, in order to confirm the accuracy of the Production and, where appropriate, the Consumption Declaration in relation to that GO Issuing Request

NOTE Such audit is achieved by reference to the records of, or made available by, the Registrant (or, if different, the owner or operator of the relevant EGI). Where appropriate, inspection of records may be supplemented by inspection of the relevant EGI.

3.41

Production Registrar

the person or organisation responsible for assessing applications to register EGIs for the purposes of the National GO Scheme

3.42

Public Support (Support)

the extent to which financial Support (other than through the sale or Cancellation of GOs) has been received or is receiving for investment in qualifying EGIs or for their current production of Output

3.43

Registrant

person in whose name a EGI is registered in a Registration Database

3.44

Registration Database (Registry)

database operated either by a Competent Body or by a third party on its behalf , comprising:

- a) Transferables and Cancellation Accounts and the GOs in those Accounts;
- b) details of EGIs and information provided to the Competent Body or a third party on its behalf in connection with the registration of those EGIs; and
- c) details of GOs which have been transferred out of that Registration Database

3.45

Registration Functions

the registration of EGIs and the issuing and registration of GOs in respect of their Output, and the maintenance of records regarding such processes

3.46

Transfer Request

request to transfer one or more GOs which specifies:

- a) the identity of the relevant GOs;
- b) the identity of the Transferables Account in which such GOs are held;
- c) the identity of the Transferee's Transferables Account; and
- d) the Registration Database on which such Transferables Account is held,

and which is made by the Account Holder of that Transferables Account or the operator of a trading exchange which the Account Holder has notified the relevant Competent Body is authorised to make such a request in relation to GOs held in its (relevant) Transferables Account

3.47

Transferables Account

record on a Registration Database relating to a particular person incorporating:

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- a) GOs Issued to that person by the Competent Body operating that Registration Database; and
- b) GOs transferred to that person by another person;

which in either case have not subsequently:

- 1) been transferred to another Transferables Account on this or another Registration Database; or
- 2) been Cancelled; or
- 3) Expired; or
- 4) been Withdrawn

3.48

Transferee

Account Holder whose Transferables Account has been nominated in a Transfer Request

3.49

Transferor

Account Holder who has requested the Competent Body in whose Registration Database a GO is held on its Transferables Account to transfer that GO to another Transferables Account

3.50

Type of Installation (of an EGI)

the type of Input consumed by a EGI and the type of technology used in the conversion of this Input into Output

NOTE See Normative Annexes A and B for clarification/more information

3.51

Useful Heat

heat produced in a Cogeneration process to satisfy an economically justifiable demand for heat or cooling, as intended by Directive 2004/8/EC

3.52

Virtual Natural Flow

the flow which would have been due to gravity, had a hydraulic linkage existed

3.53

Withdrawal

the removal of a GO from a Transferables Account or the amendment of its status by the Competent Body on whose Registration Database a GO resides

4 Main objectives

This European Standard provides guidance to Competent Bodies and their agents and stakeholders in National GO Schemes as to the manner in which they should discharge their responsibilities with respect to National GO Schemes.

This European Standard support and promote a set of long-term objectives for the development of National GO Schemes, being:

- a) Uniqueness
 - 1) No more than one Certificate with a purpose of Disclosure shall be Issued, registered or Cancelled in respect of the same unit of Output.

- 2) Competent Bodies shall ensure that the purpose of a GO is clearly communicated to National GO Scheme Participants in order that they may better inform consumers.
- a) Ownership of GOs
 - 1) Except as provided by (2), the Account Holder of a Transferable Account shall be treated as the owner of the GOs in that Transferable Account.
 - 2) The principle of ownership should not prevent the exercise by a Competent Body in whose Registration Database a GO is held of any rights with respect to that GO granted to it by the National GO Scheme. Furthermore, the principle of ownership should not impair or undermine the obligations of a Competent Body under this European Standard, or the obligations of an Account Holder under the relevant National GO Scheme.
 - b) Operational reliability and record keeping
 - 1) Contingency plans and backup facilities should be established to allow for timely recovery of records and operations and completion of the transfer process.
 - 2) Records which are sufficient to enable resolution of disputes relating to such matters as ownership of and eligibility for GOs should be kept of all material communications between Competent Bodies and National GO Scheme Participants regarding the registration of EGIs and the Issue, transfer and Cancellation of GOs.
 - c) Protection of Account Holders
 - 1) Competent Bodies and Account Holders should co-operate in seeking to minimise the risk of an unauthorised instruction with respect to a GO being acted upon.
 - d) Access and transparency
 - 1) Participation in National GO Schemes should be based on objective and publicly disclosed criteria.
 - 2) Access to details of GO should be made available to National GO Scheme Participants.
 - e) Communications
 - 1) The systems of Competent Bodies should use or accommodate appropriate international communication procedures and standards in order to facilitate effective, efficient and secure cross-border transfers.

5 Registration of Competent Bodies and their agents

5.1 Appointing authority for Competent Bodies

The appointing authority for Competent Bodies within a Domain shall be the relevant Member State.

5.2 Characteristics of Competent Bodies

A Competent Body shall not be entitled to become or remain a Competent Body if it or any of its Affiliates participates in or distorts the competition in markets associated with GO. The Competent Body may participate in the market by buying or selling GOs when fulfilling public services or in connection with the performance of Registration Functions or associated functions such as metering, inspections, reviews, audits and data collection and aggregation.

A Competent Body shall be responsible for:

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- a) a specific geographic or geopolitical Domain which does not overlap with any other Domain;
- b) issuing and administering GOs under one or more Directives;
- c) appointing where appropriate Agents in respect of some or all of the duties relating to its role as Competent Body within the relevant Domain; and ensuring that both they and their Agents comply with this European Standard;
- d) ensuring that the following are guaranteed and clearly communicated to Account Holders:
 - 1) the purpose of each GO;
 - 2) details of the National GO Scheme;
 - 3) provisions regarding the time and manner of Expiry; and
 - 4) provisions regarding the frequency with which the quantity of Output of Registered EGIs in the relevant Domain shall be determined and recorded, and with which GO are Issued;
- e) ensuring that it discharges its duties under relevant international and national law and regulation and in accordance with this European Standard, amending its practices in line with any change to international and national laws, regulations and this European Standard;
- f) imposing upon Account Holders legal requirements, remedies and sanctions for breaches of their obligations under the National GO Scheme; and to report to the relevant Competent Authorities including where relevant those in other Domains any failures by Account Holders to comply with the provisions of the National GO Scheme;
- g) operating a Registration Database in such a manner as to reliably, currently and accurately capture and record the details of and changes to:
 - 1) EGI; and
 - 2) GO, including their:
 - i) issuance;
 - ii) transfer from an Account on its Registration Database to another Account on the same Database or to an Account on the Registration Databases of another Competent Body; and Expiry, Withdrawal and Cancellation
- h) cooperating with other Competent Bodies to ensure the accurate, reliable and secure transfer of GO between Accounts.

A Competent Body shall at its own discretion conduct or commission:

- a) inspections of EGIs registered on its Registration Database and the associated Import Meter(s) and Export Meter(s) with a view to satisfying itself that:
 - 1) the information recorded in relation thereto on the Registration Database is accurate;
 - 2) the Registrant and, where applicable, the owner and/or operator of the EGI, is complying with all relevant obligations under the relevant National GO Scheme; and
 - 3) such EGI meets the Qualification Criteria for the National GO Schemes.
- b) ad hoc inspections of records associated with relevant Public Support in relation to EGIs registered on its Registration Database.

A Competent Body shall not have any benefit from any GO that might come to its possession unless that GO has been purchased by the Competent Body for the sole purposes of proving the origin of the energy that it has consumed or testing the system.

Competent Bodies shall preserve the confidentiality of information provided to them in connection with their roles as Competent Body save to the extent that:

- a) they are implicitly or explicitly required to disclose such information under this European Standard;
- b) they are otherwise authorised to disclose such information by the person to whom a duty of confidentiality with respect to such information is owed; or
- c) they are required to disclose such information by law, including by any direction or request of a Competent Body which it is reasonable for the Competent Body to treat as having the force of law.

5.3 Criteria for qualification of Competent Bodies

The Appointment Criteria in connection with a proposed Domain for a Competent Body are that:

- a) the Competent Body has been appointed for the purpose of issuing GO under the relevant National GO Scheme with respect to any EGI located in the proposed Domain; and
- b) in each such case (subject only to the consent of the owner and/or operator of the relevant EGI) is entitled:
 - 1) to use and permit such data to be used for the purposes contemplated by this European Standard; and
 - 2) with respect to such data, to grant:
 - i) a non-exclusive licence to use data provided in connection with this European Standard by that Competent Body (or on its behalf) to any other Competent Body to the extent necessary and solely for the purposes contemplated by this European Standard;
 - ii) the right to sub-license the use of such data to each other Competent Body as necessary solely for those purposes; and
 - iii) the right to grant each other Competent Body the right to sub-license the use of such data to Account Holders as necessary solely for those purposes.

5.4 Types of agent

Subject to the terms of the relevant National GO Scheme, a Competent Body may appoint an agent (a Competent Body's Agent) to discharge any of the obligations imposed on it by this European Standard or its National GO Scheme, provided such Competent Body's Agent is approved by the relevant authority in relation to such functions.

Where a Competent Body has appointed a Competent Body's Agent to discharge any of its obligations under this European Standard, then the Competent Body shall remain responsible for the discharge of such functions, and any failure on the part of that Competent Body's Agent to discharge such a function shall be treated for the purposes of this European Standard as a failure on the part of that Competent Body.

The Competent Body remains under all circumstances liable for omissions and actions performed by the appointed agent.

5.5 Criteria for qualification of agents

The criteria for approval of a Competent Body's Agent as an "approved" Competent Body's Agent in relation to functions connected with this European Standard are that:

- a) that Competent Body's Agent agrees to provide such information to other Competent Bodies, and such access to its facilities to representatives of those Competent Bodies, as may reasonably be required;
- b) that Competent Body's Agent has agreed (with the Competent Body appointing it as a Competent Body's Agent) to comply with the provisions of this European Standard regarding intellectual property as if it were a Competent Body; and
- c) that Competent Body meets such other requirements as may be specified for the purposes of this Clause 5.5.

5.6 Obligations of stakeholders

5.6.1 Obligations of Competent Bodies

The Competent Body shall ensure that:

- a) the information provided to the Competent Body in connection with that application is complete and accurate; and
- b) the EGI meets the Qualification Criteria for the relevant National GO Scheme.

The provisions of each National GO Scheme for the registration of EGIs shall be such that the relevant Competent Body (or a Production Registrar appointed by it) is entitled to inspect any EGI in relation to which it has received an application for registration together with records related thereto so as to verify the information provided in connection with that application. In case the requirements listed in Clause 5.2 are not fulfilled or if the right to carry out inspections is not met, the application for registration may be rejected.

The Competent Body shall verify the information provided in connection with an application to register an EGI in its Registration Database for the purposes of the relevant National GO Scheme and conduct an inspection of such EGI where appropriate. An inspection of an EGI is likely to be appropriate where:

- a) the Competent Body (or Production Registrar) is not familiar with the EGI;
- b) the Competent Body (or Production Registrar) is familiar with the EGI and the information provided in the relevant application does not accord with the Competent Body's (or Production Registrar's) experience and prior information;
- c) the EGI is technologically novel or complex;
- d) the information in the relevant application cannot otherwise be verified; or
- e) the relevant application relates to an EGI which is or has previously been registered and specifies significant changes to the EGI;
- f) but may be appropriate even where such circumstances do not apply.

5.6.2 Obligations of the Registrants

The provisions of a National GO Scheme with respect to the maintenance of the Registration Database shall be such that:

- a) the Registrant of an EGI shall be obliged to confirm the details of its registration for the EGI on each occasion that it notifies the Competent Body of technical changes, such as change of fuel or technology,

that have occurred, or are planned, with respect to that EGI, which has resulted or will result in the information recorded in the Registration Database concerning that EGI becoming inaccurate; and

- b) an EGI shall cease to be registered where a Registrant fails to re-apply for registration in the circumstances referred to in section a)

6 Registration of EGIs and Account Holders

6.1 Application procedure for EGIs

The registration of EGIs shall be in accordance with national law and practice.

The following information shall be provided to the Competent Body, which shall record it in its Registration Database:

- a) the applicant's name and address and additional contact details;
- b) the name or identity commonly used to identify that EGI;
- c) the Transferables Account into which GO in respect of that EGI are to be Issued, perhaps as the result of a request to open such an account in the application for registration. This will be assigned by the Competent Body unless otherwise requested by the applicant;
- d) the location of that EGI, being its:
 - 1) latitude and longitude; and/or
 - 2) country, city and postal code;
- e) the identity of all:
 - 1) Export Meter(s) for that EGI;
 - 2) production Auxiliaries;
 - 3) Import Meter(s) for all energy sources that may be converted into Electrical Energy by that EGI;
- f) the Type of Installation; see list in Annex B;
- g) the electrical nett capacity of that EGI;
- h) the date when the installation became operational according to the provisions of the National GO Scheme; the identity of the Approved Measurement Body responsible for collecting and determining the measured values of the Outputs of that EGI and providing such measured values to the Competent Body;
- i) details of any payments, where relevant (other than payments arising from the sale of GOs):
 - 1) whether and to what extent the installation has benefited from investment support;
 - 2) whether and to what extent the unit of energy has benefited in any other way from a national support scheme; and
 - 3) the type of support scheme.

Details of the following, including where relevant diagrams, shall also be provided to the Competent Body, but need not be recorded in its Registration Database:

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- a) Export Meter(s) for that EGI;
- b) production Auxiliaries (where relevant);
- c) Import Meter(s) for all energy sources that may be converted into Electrical Energy by that EGI (where relevant);
- d) the location of any transformer substations at the site of the EGI.

6.2 Application procedure for Account Holders

The registration and eligibility of Account Holders shall be in accordance with national law and practice.

The following information shall be provided to the Competent Body, which shall record it in its Registration Database:

- a) type of organisation, including proof of status according to national scheme (such as supply licence); and
- b) the applicant's name and address and additional contact details.

6.3 Obligations of Registrants

The Registrant of an EGI is placed under an obligation:

- a) to provide correct information, notify of changes taking place in advance and to inform immediately when unplanned changes take place, but no later than within ten working days;
- b) where requested to do so, to permit the Competent Body (or its Production Registrar), its servants or agents to inspect that EGI including, if so required, without prior notice; and
- c) to provide the Competent Body (or its Production Auditor) and agents with access to such records as the Competent Body (or Production Auditor) may request in relation to that EGI, its Outputs and Inputs, including, if so required, without prior notice.

6.4 Revision of Registration Databases

The Registration Database shall be amended by the Competent Body in accordance with any notification that it receives from the Registrant of a EGI of changes having the effect that the information recorded in the Registration Database in relation to that a EGI is no longer, or will cease to be, accurate; and to show that a EGI no longer qualifies for the relevant National GO Scheme where:

- a) changes are brought to its attention (pursuant to an inspection or otherwise), or planned changes have been notified to it by the Registrant of a EGI which will have the effect that this EGI no longer fulfils or will cease to fulfil the relevant Qualification Criteria. It shall do so:
 - 1) (in relation to planned changes notified in advance to the Competent Body) with effect from the date on which such planned changes are due to come into effect; or
 - 2) (in relation to other changes) as soon as reasonably practicable.
- b) the period of time during which a EGI has been recorded in an Registration Database as qualifying for an National GO Scheme is in excess of five (5) years; or
- c) a Registrant so desires

unless the Registrant confirms the details of its registration of the relevant EGI as set out in Clause 6.

When the Registrant confirms the details of its registration of an EGI, a Competent Body shall satisfy itself that the relevant records in the Registration Database adequately describe that EGI.

Where the capacity of an existing EGI increases for any reason, including refurbishment or enhancement of the EGI, then Competent Bodies may allow such additional capacity to be registered in the Registration Database for that Domain as a separate element of that EGI with the capacity and the date on which the EGI became operational as specified in Clause 6.1.

7 Issuing and content of a GO

7.1 Format of the GO

Each GO shall have a value of 1 MWh.

A GO shall contain the following information:

- a) the medium by which energy is conveyed, namely Electrical Energy;
- b) the unique number assigned to the GO by the Competent Body that Issued it, see normative Annex C;
- c) the capacity of the EGI and the date when the EGI first became operational;
- d) optionally, where applicable, the capacity of the relevant production element of the EGI and the date when it became operational;
- e) the first day on which the Output to which the GO relates was produced;
- f) the last day on which the Output to which the GO relates was produced;
- g) the Type of Installation;
- h) the identity of the Originating EGI, where this shall include the unique number which has been assigned to that EGI by the Competent Body; and the name of the EGI, provided that the Registrant of the EGI has agreed to this information being recorded on GO which are Issued for this EGI;
- i) the country in which the relevant EGI is situated;
- j) the location of that EGI, being its latitude and longitude; and/or country, city and postal code (please see Normative Annex D for more information);
- k) the identity of the Originating Competent Body;
- l) the date when the electronic Issuance of the GO took place;
- m) whether or not this GO represents Output derived from High-Efficiency Cogeneration together with the information specified in Clause 7.5; and
- n) an indication whether and to what extent the Originating EGI has received Public Support relating to investment in it and/or with respect to Output produced by it.

7.2 The Issuing process

GOs may be Issued either automatically on receipt of the relevant measurement data, or on request by means of a GO Issuing Request from the authorised representative of the EGI.

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Competent Bodies shall not Issue more than one GO in respect of the same Output in respect of the same MWh produced.

A Competent Body may retain a quantity of Output that is less than 1 MWh until the quantity of Output available from the corresponding EGI is sufficient to qualify for the Issue of a GO.

The period between measurements (the Measurement Frequency) may not be more than twelve months.

Where the period between measurements of the Output of an EGI is more than one month, then the number of GO Issued to an EGI for each month may be determined on a pro-rata or profiled basis in accordance with the relevant National GO Scheme by reference to the period between measurements.

A Competent Body may only Issue GOs to EGIs which are situated in its Domain, and may do so either automatically, or on receipt of a request for issuance from the Registrant of that EGI.

Any request for the issuance of GOs shall be submitted to the Competent Body no longer than **[.three.]** months after the end of the period to which the Output relates, and the Competent Body shall Issue the related GOs within ten working days of such request being received.

GOs may only be Issued for the Output of an EGI provided the relevant attributes of such Output have not been and are not being otherwise Disclosed, and that this has been guaranteed by the recipient of the GO to the relevant Competent Body.

Upon Issue, any GO shall be placed in the Transferables Account nominated for such purposes by the Registrant of the Originating EGI.

The Competent Body shall be obliged to inform the holder of any such Transferables Account of the Issuance of any GO into its Transferables Account and of the details of that GO or otherwise make such information available to that person.

A Competent Body shall not alter the details of any GO (save with respect to the Account in which it is held) or Withdraw any GO once it has been Issued, save as provided by Clauses 9 and 10.3.

7.3 Calculation of Output

Subject to the requirements of the National GO Scheme, the amount of Output determined for the purposes of GOs shall be either:

- a) the amount of Gross Electrical Energy produced by that Electrical Energy Generation Installation multiplied by the Energy Input Factor for that Input, which shall be equal to one (1) where the Electrical Energy Generation Installation produces energy from one Input, or as calculated below where the Electrical Energy Generation Installation produces energy from more than one Input. A Competent Body shall Cancel upon Issuance each GO Issued in respect of Electrical Energy consumed by consumption Auxiliaries (including pumping); or
- b) the amount of Nett Electrical Energy Generation produced by that Electrical Energy Generation Installation multiplied by the Energy Input Factor for that Input, which shall be equal to one (1) where the Electrical Energy Generation Installation produces energy from one Input, or as calculated in the following paragraphs where the Electrical Energy Generation Installation produces energy from more than one Input. Explanatory diagrams are to be found in Clause 11.

A person submitting a GO Issuing Request in relation to an EGI for which one of the Inputs is stored energy shall be obliged to submit (in respect of the same period as that to which the GO Issuing Request relates) a Consumption Declaration and to specify therein the amount of Output consumed in storing energy for use by that EGI in that period.

A person submitting a GO Issuing Request in relation to an EGI for which there is more than one Input shall be obliged to submit (in respect of the same period as that to which the GO Issuing Request relates) a Consumption Declaration for each combustible Input and to specify therein:

- a) the values of M^1 , C^1 M^n and C^n ; and
- b) the Energy Input Factor L for that Input and that period, where L is the proportion of the total Output produced during this period by the relevant Input and is calculated as follows:

$$L = \frac{M^1 \times C^1}{(M^1 \times C^1) + \dots + (M^n \times C^n)}$$

where (for the relevant Energy Input and period)

M^1 is the mass of the relevant Energy Input for that EGI during that period.

C^1 is the average calorific value of the relevant Energy Input for that EGI during that period.

M^n is the mass of each Input other than the relevant Input for that EGI during that period.

C^n is the average calorific value of each Input other than the relevant Input for that EGI during that period.

7.4 CO₂ emissions and nuclear waste

This paragraph shall be commented on during the enquiry balloting period – please submit comments whether it should be kept or not. (If it is kept, nuclear waste will also be mentioned in the list in 7.1)

In addition to the information contained on a GO as identified in Clause 7.1, each National GO Scheme may provide that a GO Issued thereunder:

- a) shall record the CO₂ emitted by the Originating EGI in the production of 1 MWh of Electrical Energy and associated with the relevant Input in kilograms per MWh of final energy produced; and shall be based on standardised Life Cycle Assessment; prEN 16214-4 *Sustainably produced biomass for energy applications — Principles, criteria, indicators and verifiers for biofuels and bioliquids — Part 4: Calculation methods of the greenhouse gas emission balance using a life cycle analysis* or EN ISO 14040:2006 *Environmental management - Life cycle assessment - Principles and framework* and EN ISO 14044:2006 *Environmental management - Life cycle assessment - Requirements and guidelines*; and
- b) for nuclear source Electrical Energy shall record the radioactive waste produced per unit of Electrical Energy (as required by the IEM Directive) in [m^3/MWh].

7.5 Special provisions for High-Efficiency Cogeneration Electrical Energy

The amount of High-Efficiency Cogeneration Electrical Energy Generation produced by an EGI shall be:

- a) where the EGI produces High-Efficiency Cogeneration Electrical Energy Generation only, the amount of Electrical Energy produced by that EGI from fuels consumed at the same site; and
- b) where the EGI produces High-Efficiency Cogeneration Electrical Energy Generation and Electrical Energy which is not High-Efficiency Cogeneration Gross Electrical Energy calculated in accordance with Annexes II and III of the Cogeneration Directive taking into account only energy produced from Inputs at the same site.

In addition to the information contained on a GO as identified in Clause 7.1, each National GO Scheme must provide that, for Electrical Energy which has been found to be High-Efficiency Cogeneration Electrical Energy, a GO Issued thereunder shall contain the following information:

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- a) use of heat, being the value which represents the predominant use of the relevant heat (please see Normative Annex E for more information);
- b) lower calorific value in megajoules per kilogramme of fuel or megajoule per cubic metre of gaseous fuel or megajoule per litre of liquid fuels;
- c) Primary Energy Savings, including:
 - 1) the primary energy saved expressed as a percentage according to Annex III of the Cogeneration Directive; and
 - 2) the actual amount of primary energy saved expressed in megajoules per MWh; and
 - 3) the overall Primary Energy Savings expressed as a percentage based on the total energy Input and Output flows of a Cogeneration unit (whereas the Annex III Primary Energy Savings calculations identified in Section 5.8(c)(i) of the Annex are based on the Cogeneration Inputs and Outputs only).

8 Transferring of GOs

8.1 General

Solely duly authorised personnel of an Account Holder (or of a trading exchange duly authorised by the Account Holder) may make a Transfer Request on behalf of that Account Holder with respect to a GO held on that Account Holder's Transferables Account.

8.2 The Transfer process

Where a Competent Body receives a Transfer Request it shall, having confirmed that the Transfer Request is valid:

- a) remove the GOs specified in the Transfer Request from the relevant Transferables account;
- b) where the Transferee's Transferables Account is in its own Registration Database:
 - 1) add the GOs referred to in section (a) to the Transferee's Transferables Account;
 - 2) confirm, to the Transferor, the identity of the transferred GOs; and
 - 3) confirm, to the Transferee, the identity of the Transferor and of the transferred GOs by reference to their unique identifying number and
- c) where the Transferee's Transferables Account is on the Registration Database of another Competent Body:
 - 1) notify that other Competent Body of that Transfer Request;
 - 2) send the full details of the GOs referred to at section (a) to that other Competent Body;
 - 3) record on its own Registration Database the export of such GOs; and
 - 4) on receipt of confirmation from that other Competent Body that the transfer has been completed, confirm to the Transferor the identity of that other Competent Body and of the GOs so transferred.

8.3 Import/export from Registration Databases

Where a Competent Body is notified by another Competent Body of a Transfer Request, and pursuant thereto receives details of a GO which are consistent with the Criteria as set out in Clause 8.2 for such a GO together with the account number for a Transferables Account on its own Registration Database, it shall:

- a) insert the full details of that GO in that Account Holder's Transferables Account;
- b) confirm to the Competent Body that notified it of such Transfer Request that the transfer of that GO has been completed; and
- c) confirm, to the Transferee, that such GO has been transferred by reference to its unique identifying number.

Where a Competent Body is notified by another Competent Body of a Transfer Request, and pursuant thereto:

- a) receives details of a GO which does not satisfy its Criteria as set out in Clause 8.2 for such a GO; and/or
- b) receives an account number which does not correspond with an account number for a Transferables Account on its own Registration Database

then each such Competent Body shall use reasonable endeavours to exchange information such that the GO can be rendered compliant with that National GO Scheme or the correct account number identified (as the case may be), failing which:

- a) the full details of the GO shall be re-entered into the Transferor's Transferables Account on the relevant Registration Database, and that Registration Database shall be amended so that the GO is no longer recorded as having been exported; and
- b) all details of the GO shall be removed from the other Registration Database.

A Competent Body may not transfer (or attempt to transfer) a GO:

- a) to another Competent Body other than between their respective Registration Databases for the purposes of that National GO Scheme; or
- b) to a body other than Competent Body.

A Competent Body may not receive (or attempt to receive) transfers of GOs other than:

- a) into its Registration Database from the Registration Database of a Competent Body; and
- b) where its own Criteria as set out in Clause 8.2 are met in relation to such transfer.

A Competent Body shall not permit the transfer of a GO which has been Cancelled.

9 Correction of errors

Where an error is introduced (subsequent to its Issue) into, or with respect to, a GO held in an Account Holder's Transferables Account in a Competent Body's Registration Database:

- a) in the course of its Transfer into that Account; or
- b) during such time as it is in such Account,

that Competent Body shall correct the error in or with respect to that GO by Withdrawing or Altering this GO, provided that it has not been Transferred out of that Transferables Account.

Where the erroneous GO has been Transferred into another Transferables Account in its Registration Database, the Competent Body may Withdraw or Alter the GO, so as to rectify an error which occurred prior to its Transfer into the Account in which it is held at such time, provided:

- a) the Account Holder has agreed to such Alteration or Withdrawal;
- b) it is reasonably satisfied that any unjust enrichment of the Account Holder as a consequence of such error has, to the extent reasonably practicable, been nullified; and
- c) it is reasonably satisfied that the Alteration or Withdrawal itself does not give rise to undue enrichment of the Account Holder.

Each Competent Body shall afford each other Competent Body all such co-operation as may be required to identify and rectify errors in GOs in a timely manner.

10 End of the life of a GO

10.1 General

A GO shall cease to be valid when:

- a) it is Cancelled in accordance with a valid Cancellation request made under Clause 10.2.1;
- b) it is withdrawn in accordance with Clause 10.3; or
- c) its validity Expires in accordance with Clause 10.4 and in the manner and time set out in the relevant National GO Scheme.

10.2 Cancellation

10.2.1 Cancellation procedure

Solely duly authorised personnel of an Account Holder are entitled to request the Cancellation of a GO held in that Account Holder's Transferables Account.

Where an Account Holder requests that a Competent Body Cancel a number of GOs then such a request shall contain the following information:

- a) the Account Holder requesting Cancellation of the GOs;
- b) the Type of Installation. See list in Annex B;
- c) the relevant number of GOs associated with each EGI or category listed in (b) to be Cancelled;
- d) the relevant production period(s);
- e) the beneficiaries of the Cancellation, being:
 - 1) the type of consumer, being either "energy supplier" or "end-consumer";
 - 2) the identity of the energy supplier or end-consumer according to type of consumer as identified in (1);
 - 3) location and country of energy supplier or end-consumer according to type of consumer as identified in (1).

Where a Competent Body receives from an Account Holder (which may or may not be a Cancelling Body) a request made in accordance with this Clause and the relevant National GO Scheme to Cancel a GO held in that Account Holder's Transferables Account on that Competent Body's Registration Database, the Competent Body shall:

- a) remove the details of that GO from that Transferables Account;
- b) either:
 - 1) insert the details of that GO in the Cancellation Account of the Cancelling Body which made, or is specified, in that request; or
 - 2) change the status of that GO from valid to Cancelled;
- c) notify the Account Holder of the Cancellation of the GO
- d) provide details of the Cancelled GO to the Cancelling Body and its auditors where requested to do so.

A Competent Body may Cancel a GO solely:

- a) for use in its own Domain; or
- b) for use in any country or region which has yet to appoint a Competent Body.

10.2.2 Requesting and Producing a Cancellation Statement

The provisions of a National GO Scheme may provide for the issuance of Cancellation Statements.

A request may be made by an Account Holder to a Competent Body for the production of a Cancellation Statement in relation to GOs that have been Cancelled from the Transferables Account of that Account Holder in accordance with Clause 10.2.1.

Where a Competent Body produces a Cancellation Statement pursuant to a request made in accordance with Clause 10.2.1 then it shall use the Cancellation Statement format identified in the relevant National GO Scheme of that Competent Body.

The provisions of each National GO Scheme must be such that in addition to the items listed in clause 10.2.1 each Cancellation Statement must display:

- a) a statement that it relates to the Cancellation of GOs;
- b) the account number, name and address of the Account Holder that made the request;
- c) a statement that the environmental qualities of the associated energy have been consumed and that this Cancellation Statement and these GO may not be transferred to any party other than the energy supplier or end-consumer;
- d) the identity of each GO that is associated with this Cancellation Statement; and
- e) the date of producing the Cancellation Statement.

When producing a Cancellation Statement, a Competent Body shall record in its Registration Database the GOs that are included in that Cancellation Statement, ensuring that each GO is included in no more than one Cancellation Statement.

10.3 Withdrawal

A Competent Body may Withdraw and, where appropriate, Issue a corrected GO held in a Transferables Account on its Registration Database;

- a) where some data of the GO is inaccurate whether or not due to an act or omission of the account Holder;
or
- b) at the request of the Account Holder of that Account.

In the case of (a) above, the National GO Scheme may provide that in case it is considered reasonable by the Competent Body, the Registrant shall pay the Competent Body the cost of securing the agreement of another Account Holder to the Withdrawal of GOs of the same type from that other Account Holder's Transferables Account so that, as far as reasonably practicable, the discrepancy is compensated.

10.4 Expiry

The Competent Body shall Expire the GO no more than 12 months after the end of the period during which the associated Electricity was produced.

The status of a GO which has Expired according to the above shall be recorded as Expired in the Registration Database in which it is held at such time.

11 Measurement and calculation methods

11.1 Metering

11.1.1 General metering principle

Electricity flows to and from the Electricity generation plant should be measured over a period in order to establish the nett Electricity generated during that period. The accuracy of the metering shall be according to national legislation and practise/standards.

The Registrant of an EGI is responsible for the delivery, quality and accuracy of measured values with respect to the energy Output of that EGI.

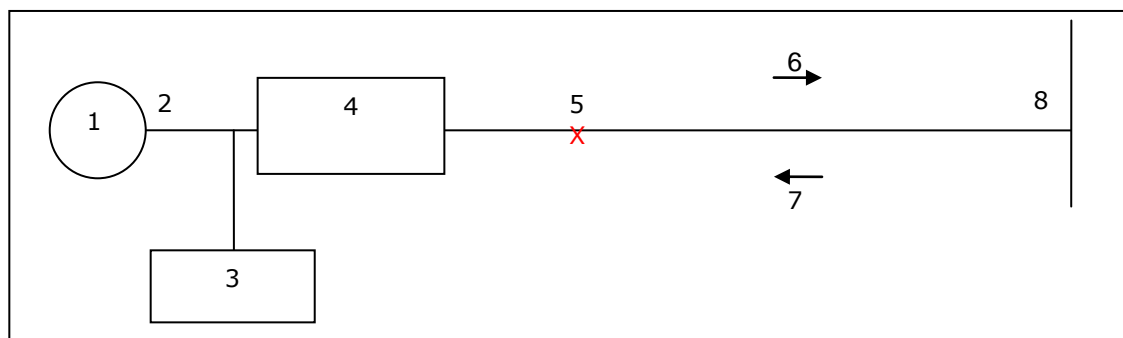
GOs shall solely be Issued in respect of Output of which the measured value has been collected and determined by an Approved Measurement Body.

Some measurements can be calculated from others, which may allow for a reduced number of meters.

11.1.2 Calculation of Nett Electricity

The Nett Electricity is calculated at the points shown in the following Figures;

- a) Nett Electricity in simple case



Key	5 Nett
1 Generator	6 Export Meter
2 Gross	7 Import meter
3 Auxiliaries	8 Grid
4 Transformer	

Figure 1 — Nett Electricity in simple case

E_{net} is the nett Electricity, where: $E_{net} = E_{gross} - (E_{aux} + E_{TRANS})$ and:

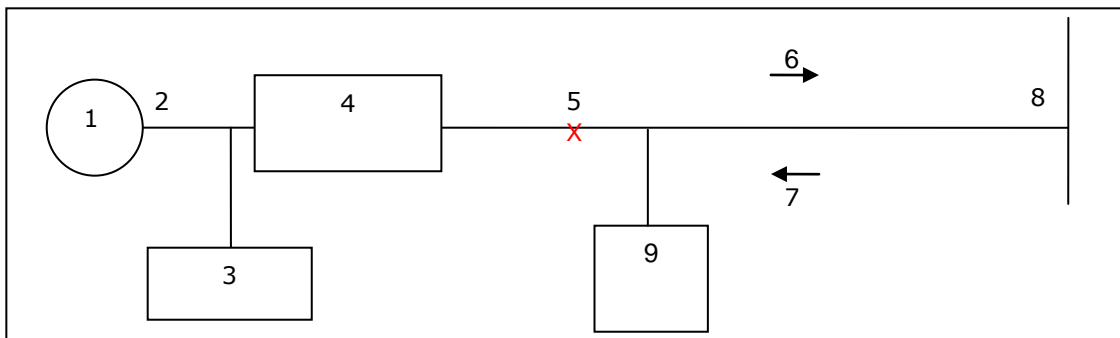
E_{gross} = Gross Electricity generation, as measured at the generator

E_{aux} = Electricity consumed by Auxiliaries (i.e. for purposes of Electricity generation)

E_{TRANS} = Transformer losses

b) Nett Electricity with On-Site Demand

On-Site Demand does not influence Nett Electricity, although the quantity of Electricity injected to the network would be smaller than the Nett Electricity.



Key	6 Export Meter
1 Generator	7 Import meter
2 Gross	8 Grid
3 Auxiliaries	9 On-Site Demand
4 Transformer	
5 Nett	

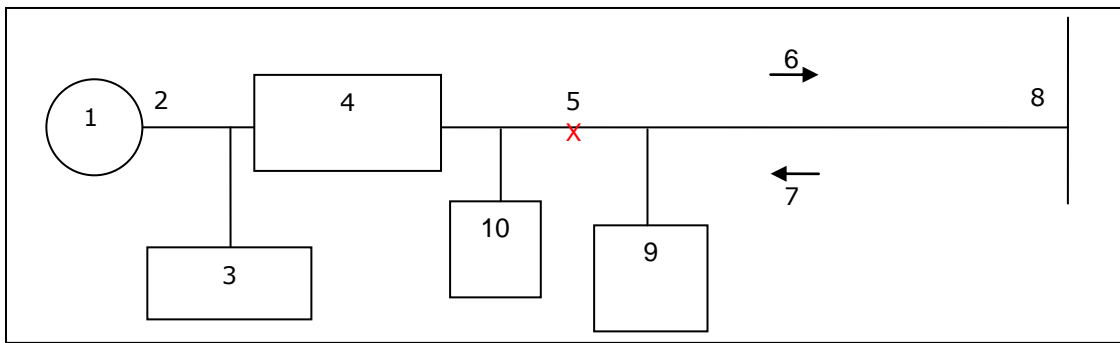
Figure 2 — Nett Electricity with On-Site Demand

As in case a) above, E_{net} is the nett Electricity, where: $E_{net} = E_{gross} - (E_{aux} + E_{TRANS})$.

c) Nett Electricity with pumping or storage Auxiliaries

Like Auxiliaries, energy used for pumping should be accounted for as measured, and deducted in the calculation of nett Electricity.

In case of another storage medium, any Electrical Energy spent on the storage should be handled in a similar fashion to pumping energy.



Key

- | | |
|---------------|---|
| 1 Generator | 6 Export Meter 0 |
| 2 Gross | 7 Import meter |
| 3 Auxiliaries | 8 Grid |
| 4 Transformer | 9 On-Site Demand |
| 5 Nett | 10 Pumping (or other storage auxiliary) |

Figure 3 — Nett Electricity with pumping or storage Auxiliaries

In this case, E_{net} is the nett Electricity, where: $E_{net} = E_{gross} - (E_{aux} + E_{TRANS}) - E_{pump}$ where:

E_{pump} = Electricity used for pumping

11.1.3 Relevant perimeter

The relevant perimeter shall be calculated in accordance with Annex F.

12 Auditing

12.1 Assessment of the GO Scheme

When required by the Competent Body a report verified by an accredited auditor shall be provided. The auditor shall publish a statement that the audit has been carried out.

12.2 Auditing of EGIs

Auditing of EGIs shall be done in accordance with prEN 16247-1 *Energy audits - Part 1: General requirements*.

12.3 Operational practice

The provisions of each National GO Scheme must be such that:

- a) each Account Holder shall be required to keep secret any passwords and other information used to establish that communications purportedly made on its behalf in connection with the National GO Scheme are duly authorised ("authorisation data");
- b) each Competent Body shall require Account Holders to agree that any communication which is sent using its currently applicable authorisation data is valid and is committing to the Account Holder;
- c) the Account Holder(s) and the relevant Competent Body shall be obliged to retain all records to which they have had access relating to that GO for not less than 10 years after its Cancellation (or such longer period as may be required by applicable national legislation); and

- d) each Competent Body shall ensure that its manual and automated information systems for the Issue, holding and transfer of GO are able to support audit of all transactions with respect to GO held on its Registration Database or transferred to or from such Registration Database.

Annex A (normative)

Fuel (or heat source) codes

Table A.1 — Fuel (or heat source) codes

Level 1		Level 2		Level 3		Level 4				
Code	Description	Code	Description	Code	Description	Code	Description	Full code		
0	Unspecified	0	Unspecified	0	Unspecified	0	Unspecified	F00000000		
1	Renewable	1	Solid	0	Unspecified	0	Unspecified	F01010000		
				1	Municipal waste	1	Biogenic	F01010101		
				2	Industrial and commercial waste	1	Biogenic	F01010201		
				3	Wood	0	Unspecified	F01010300		
						1	Forestry products	F01010301		
						2	Forestry by-products & waste	F01010302		
				4	Animal Fats	0	Unspecified	F01010400		
				5	Biomass from agriculture	0	Unspecified	F01010500		
						1	Agricultural products	F01010501		
						2	Agricultural by-products & waste	F01010502		
				2	Liquid	0	Unspecified	0	Unspecified	F01020000
						1	Municipal biodegradable waste	0	Unspecified	F01020100
						2	Black liquor	0	Unspecified	F01020200
						3	Pure plant oil	0	Unspecified	F01020300
								1	Rapeseed (Brassica napus L.)	F01020301
		2	Sunflower (Helianthus annuus L.)					F01020302		
		3	Oil palm (Elaeis guineensis Jacq.)					F01020303		
		4	Coconut (Cocos nucifera L.)					F01020304		
		5	Yatropha					F01020305		
		4	Waste plant oil			0	Unspecified	F01020400		
		5	Refined vegetable oil			0	Unspecified	F01020500		
						1	Biodiesel (mono-alkyl ester)	F01020501		
				2	Biogasoline (C6-C12 hydrocarbon)	F01020502				

Level 1		Level 2		Level 3		Level 4				
Code	Description	Code	Description	Code	Description	Code	Description	Full code		
		3	Gaseous	0	Unspecified	0	Unspecified	F01030000		
				1	Landfill gas	0	Unspecified	F01030100		
				2	Sewage gas	0	Unspecified	F01030200		
				3	Agricultural gas	0	Unspecified	F01030300		
						1	Pig manure	F01030301		
						2	Cow manure	F01030302		
						3	Chicken manure	F01030303		
						4	Unspecified manure	F01030304		
				5	Energy crops	F01030305				
		4	Gas from organic waste digestion	0	Unspecified	F01030400				
		5	Process gas	1	Biogenic	F01030501				
		4	Heat	1	Solar	0	Unspecified	F01040100		
				2	Geothermal	0	Unspecified	F01040200		
						1	Conventional geothermal heat	F01040201		
						2	Enhanced dry bed geothermal heat	F01040202		
				3	Aerothermal	0	Unspecified	F01040300		
				4	Hydrothermal	0	Unspecified	F01040400		
				5	Process heat	1	Biogenic	F01040501		
		5	Mechanical source or other	0	Unspecified	0	Unspecified	F01050000		
				1	Wind	0	Unspecified	F01050100		
				2	Hydro & marine	0	Unspecified	F01050200		
		2	Fossil	1	Solid	0	Unspecified	0	Unspecified	F02010000
						1	Hard coal	0	Unspecified	F02010100
1	Anthracite							F02010101		
2	Bituminous coal							F02010102		
3	Coking coal							F02010103		
4	Coke-oven coke							F02010104		
5	Lignite coke							F02010105		
2	Brown coal					0	Unspecified	F02010200		
						1	Sub-bituminous coal	F02010201		
						2	Lignite	F02010202		
						3	Brown coal briquette	F02010203		
4	Peat briquette					F02010204				
3	Peat					0	Unspecified	F02010300		

Level 1		Level 2		Level 3		Level 4				
Code	Description	Code	Description	Code	Description	Code	Description	Full code		
				4	Municipal waste	0	Unspecified	F02010400		
				5	Industrial and commercial waste	0	Unspecified	F02010500		
						1	Non-renewable	F02010501		
		2	Liquid	0	Unspecified	0	Unspecified	F02020000		
				1	Crude oil	0	Unspecified	0	Unspecified	F02020100
						1	Shale oil	F02020101		
						2	Natural gas liquids (NGL)	0	Unspecified	F02020200
				3	Petroleum products	0	Unspecified	0	Unspecified	F02020300
						1	Ethane	F02020301		
						2	Naphtha	F02020302		
						3	Aviation gasoline	F02020303		
						4	Motor gasoline	F02020304		
						5	Aviation turbine fuel	F02020305		
						6	Other kerosene	F02020306		
						7	Gas/diesel oil	F02020307		
						8	Fuel oil, low-sulphur	F02020308		
						9	Fuel oil, high-sulphur	F02020309		
						10	Liquid Petroleum Gas	F02020310		
		11	Orimulsion			F02020311				
		12	Bitumen			F02020312				
		13	Lubricants			F02020313				
		14	Petroleum coke			F02020314				
		15	Refinery Feedstock	F02020315						
		3	Gaseous	0	Unspecified	0	Unspecified	F02030000		
				1	Natural gas	0	Unspecified	F02030100		
				2	Coal-derived gas	0	Unspecified	0	Unspecified	F02030200
						1	Blast furnace gas	F02030201		
						2	Coke-oven gas	F02030202		
				3	Petroleum products	0	Unspecified	0	Unspecified	F02030300
						1	Propane	F02030301		
						2	Butane	F02030302		
						3	Refinery gas	F02030303		
				4	Chemical waste gas	F02030304				
		4	Municipal gas	0	Unspecified	0	Unspecified	F02030400		

Level 1		Level 2		Level 3		Level 4		
Code	Description	Code	Description	Code	Description	Code	Description	Full code
					plant			
				5	Process gas	0	Unspecified	F02030500
						1	Carbon monoxide	F02030501
						2	Methane	F02030502
						3	Hydrogen (fossil sourced)	F02030503
						4	Phosphor gas	F02030504
						5	Oxy gas	F02030505
		4	Heat	0	Unspecified	0	Unspecified	F02040000
						1	Non-renewable	F02040001
				1	Process heat	0	Unspecified	F02040100
						1	Non-renewable	F02040101
3	Nuclear	1	Solid	1	Radioactive fuel	0	Unspecified	F03010100
						1	UOX	F03010101
						2	AGR	F03010102
						3	MOX	F03010103

Annex B (normative)

Technology codes

Table B.1 — Technology codes

Level 1		Level 2		Level 3				
Code	Description	Code	Description	Code	Description	Full code		
1	Solar	0	Unspecified	0	Unspecified	T010000		
		1	Photovoltaic	0	Unspecified	T010100		
				1	Classic silicon	T010101		
				2	Thin film	T010102		
2	Concentration	0	Unspecified	T010200				
2	Wind	0	Unspecified	0	Unspecified	T020000		
				1	Onshore	T020001		
				2	Offshore	T020002		
3	Hydro-electric installations	head		0	Unspecified	T030000		
				1	Run-of-river head installation	0	Unspecified	T030100
				2	Storage head installation	0	Unspecified	T030200
				3	Pure pumped storage head installation	0	Unspecified	T030300
				4	Mixed pumped storage head	0	Unspecified	T030400
4	Marine			0	Unspecified	T040000		
				1	Tidal	0	Unspecified	T040100
						1	Onshore	T040101
						2	Offshore	T040102
				2	Wave	0	Unspecified	T040200
						1	Onshore	T040201
						2	Offshore	T040202
				3	Currents	0	Unspecified	T040300
				4	Pressure	0	Unspecified	T040400
				5	Thermal			0
1	Combined cycle gas turbine with heat recovery	0	Unspecified					T050100
		1	Non CHP					T050101
		2	CHP					T050102
2	Steam turbine with back-pressure turbine (open cycle)	0	Unspecified					T050200
		1	Non CHP					T050201
		2	CHP					T050202
3	Steam turbine with condensation turbine (closed cycle)	0	Unspecified					T050300
		1	Non CHP					T050301
		2	CHP					T050302
4	Gas turbine with heat recovery	0	Unspecified					T050400
		1	Non CHP					T050401
		2	CHP					T050402
5	Internal combustion engine	0	Unspecified					T050500
		1	Non CHP					T050501
		2	CHP	T050502				

Level 1		Level 2		Level 3		
Code	Description	Code	Description	Code	Description	Full code
		6	Micro-turbine	0	Unspecified	T050600
				1	Non CHP	T050601
				2	CHP	T050602
		7	Stirling engine	0	Unspecified	T050700
				1	Non CHP	T050701
				2	CHP	T050702
		8	Fuel cell	0	Unspecified	T050800
				1	Non CHP	T050801
				2	CHP	T050802
		9	Steam engine	0	Unspecified	T050900
				1	Non CHP	T050901
				2	CHP	T050902
		10	Organic rankine cycle	0	Unspecified	T051000
				1	Non CHP	T051001
				2	CHP	T051002
6	Nuclear	0	Unspecified	0	Unspecified	T060000
		1	Heavy-water reactor	0	Unspecified	T060100
		2	Light water reactor	0	Unspecified	T060200
		3	Breeder	0	Unspecified	T060300
		4	Graphite reactor	0	Unspecified	T060400
7	Other	0	Unspecified	0	Unspecified	T070000

Annex C (normative)

Coding structures

C.1 Introduction

In order to ensure uniqueness of all data identifiers a methodology of coding has been implemented. The coding structure is based on the GS1 (once known as EAN.UCC) numbering structure.

Alternative codes are supported by the data file structure so that, in principle, a trading account could be represented by some other suitably unique code. However, the use of alternative codes is not necessarily supported by all registries. Accordingly, all Registration Databases must support at least the set of codes specified here.

C.2 Coding of Registration Databases

Each Registration Database must maintain at least one GS1 prefix to be used in accordance with the GS1 numbering structure. The Registration Database Prefix forms an essential part of the coding for Electricity Generation Installations and GOs. A Company Prefix is a numeric identifier of between 6 and 10 digits in length.

The Competent Body Company Prefix is used as the Competent Body ID. Where a Competent Body maintains more than one prefix, one prefix may be chosen as the Competent Body ID.

EXAMPLE Competent Body Company Prefixes are:

51234567 (8 digit Company Prefix)

598765432 (9 digit company prefix)

C.3 Coding of certificates

Certificates will be coded in accordance with Global Individual Asset Identifier (GIAI) (AI 8004), an element of the GS1 numbering structure. The certificate number is always exactly 30 digits long.

Table C.1 — Coding of certificates

Format of the element string				
	Global Individual Asset Identifier			
	GS1 Company Prefix for the Competent Body	Individual	Asset	Reference
	N ₁ ... N _i	N _{i+1} ...	variable length	N ₃₀

NOTE i represents the length of the Company Prefix for the Competent Body.

The GIAI uses the GS1 Company Prefix of the Competent Body assigning the Asset Reference. The structure and numbering of the Individual Asset Reference is determined by the relevant Competent Body. Competent

Bodies may adopt any numbering methodology appropriate to the coding structure, although it is recommended that sequential Individual Asset Reference numbers be assigned.

Although the GS1 specification for GIAI allows the Individual Asset Reference to contain all characters contained in Table 1 of the International Standard ISO/IEC 646, for the purposes of Certificate coding only numeric characters are permitted.

EXAMPLE GIAI-based Certificate Number:

512345670000000000000000000000001234 (8 digit Company Prefix with 22 digit Individual Asset Reference)

C.4 Coding of Electricity Generation Installations

Electricity Generation Installations will be coded in accordance with Global Service Relation Number (GSRN) (AI 8018), an element of the GS1 numbering structure.

Table C.2 — Coding of EGIs

Format of the element string																		
	Global Service Relation Number																	
	GS1 Company Prefix For the Competent Body														Service Reference			Check digit
	N ₁	N ₂	N ₃	N ₄	N ₅	N ₆	N ₇	N ₈	N ₉	N ₁₀	N ₁₁	N ₁₂	N ₁₃	N ₁₄	N ₁₅	N ₁₆	N ₁₇	N ₁₈

The GSRN uses the GS1 Company Prefix of the Competent Body assigning the Service Reference. The Service Reference is assigned by the Competent Body and relates to an individual Electricity Generation Installation. The structure and content of the Service Reference number is at the discretion of the Competent Body.

The Check Digit is calculated as shown below. Its verification, which must be carried out in the application software, ensures that the number is correctly composed.

Table C.3 — Check digit calculation

Check digit calculation																			
	Global service relation number																		
	GS1 Company Prefix For the Competent Body														Service Reference			Check digit	
	N ₁	N ₂	N ₃	N ₄	N ₅	N ₆	N ₇	N ₈	N ₉	N ₁₀	N ₁₁	N ₁₂	N ₁₃	N ₁₄	N ₁₅	N ₁₆	N ₁₇	N ₁₈	
	Multiply value of each position by																		
	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3
	Accumulated results = 'sum'																		
Check digit = (nearest multiple of 10 ≥ 'sum') – 'sum'																			

Table C.4 — Example check digit calculation

Example check digit calculation																		
Start number	Global Service Relation Number																	
	GS1 Company Prefix For the Competent Body												Service Reference				Check digit	
	3	7	6	1	0	4	2	5	0	0	2	1	2	3	4	5	6	
Interim	Multiply value of each position by																	
	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3	x1	x3	
	9	7	18	1	0	4	6	5	0	0	6	1	6	3	12	5	18	
Final number	Accumulated results = 'sum'																	
	Check digit = (nearest multiple of 10 ≥ 'sum') – 'sum'																	
		3	7	6	1	0	4	2	5	0	0	2	1	2	3	4	5	6

EXAMPLE GSRN-based Electricity Generation Installation Numbers are:

512345670000012347 (8 digit Company Prefix with 9 digit Service Reference and single Check Digit)

598765432000001235 (9 digit Company Prefix with 8 digit Service Reference and single Check Digit)

C.5 Coding of Account Holder Account IDs

Each Account Holder shall be assigned a unique account reference by their host IB. The account reference shall be composed as follows:

- IB_ID (2 numeric digits)
- X (single 'X' character)
- 6 character alphanumeric ID (0-9 and A-Z only)
- check character (see below)

An example Account Holder Account ID is 10XRWENETJ.

A check character is a character added to the end of the Account Holder Account ID that validates the authenticity of the code. A simple algorithm is applied to the other digits or letters of the code which yields the check character.

The last character of each of the Account Holder Account ID represents the check character that is calculated from the other characters using the following algorithm. An example of an Account Holder Account ID is 10XRWENETJ.

Calculation of the check character:

- a) The first 9 characters of the code are individualised as follows:

1	0	X	R	W	E	N	E	T
---	---	---	---	---	---	---	---	---

- b) Where alphabetic characters are present, they are replaced by a numeric value with the value 10 for the letter « A » ; 11 for the letter « B » ; 12 for the letter « C », etc. and 35 for the letter « Z », as follows :

1	0	33	27	32	14	23	14	29
---	---	----	----	----	----	----	----	----

- c) Then, the positions are again weighted, beginning with the greatest value to the left and ending with a one at the far right.

1	0	33	27	32	14	23	14	29
10	9	8	7	6	5	4	3	2

- d) Each digit is multiplied by its position weight

10	0	264	189	192	70	92	42	58
----	---	-----	-----	-----	----	----	----	----

- e) The products are then summed to give a total value: 917

- f) A modulo 36 (which corresponds to the total number of characters available) is applied to the value 917 with the formula $(36 - \text{MOD}([\text{value}],36))$. This produces a numeric value in the range 1 to 36.

In the above example, the result is 19 which, since it is superior to 9 has to be converted to a letter using a similar mechanism as in Step 2. Number 0 is not an allowed output. Where the check character code is 36, this is represented as the character “[”.

Thus the code for the above example is: “10XRWENETJ”. With an account base of 11XYWZNET, the check character would be “[”, and the full account code would be “11XYWZNET[”.

C.6 Coding of Technologies

Technologies are found in Annex xxx (Types of Energy Sources and Technologies).

Annex D (normative)

Geographical coordinates

Table D.1 — Geographical coordinates

Domain		Member		Geographical map location coordinate standards
Code	Name	Name	Code	
AT	Austria	Energie-Control	12	<ul style="list-style-type: none"> ▪ Fessl Lambert 48 (Austria) ▪ Gauß Krüger 28, 31 und 34 (Europe and global) ▪ WGS 84 (GPS-based, global)
BEB	Belgium (Brussels)	Brugel	34	
BEF	Belgium (Flanders)	VREG	29	<ul style="list-style-type: none"> ▪ Address of production units (street and house number)
BEW	Belgium (Wallonia)	CWaPE	33	
CH	Switzerland	swissgrid	32	<ul style="list-style-type: none"> ▪ Swiss coordinates (CH1903)
<i>CY</i>	<i>Cyprus</i>	<i>Not appointed</i>	<i>21</i>	
<i>CZ</i>	<i>Czech Republic</i>	<i>Not appointed</i>	<i>22</i>	
DE	Germany	Öko-Institut	01	<ul style="list-style-type: none"> ▪ UTM WGS 84 ▪ Gauß Krüger (a German projection) ▪ Geographic coordinates
DK	Denmark	Energinet.dk	02	<ul style="list-style-type: none"> ▪ ETRS 89
<i>EE</i>	<i>Estonia</i>	<i>Not appointed</i>	<i>23</i>	
ES	Spain	GCC	35	
FI	Finland	Grexel	30	<ul style="list-style-type: none"> ▪ WGS 84
FR	France	Observ'ER	05	<ul style="list-style-type: none"> ▪ RGF93
<i>GB</i>	<i>United Kingdom</i>	<i>Not appointed</i>	<i>10</i>	
<i>GR</i>	<i>Greece</i>	<i>Not appointed</i>	<i>28</i>	
<i>HU</i>	<i>Hungary</i>	<i>Not appointed</i>	<i>24</i>	
IE	Ireland	GCC	11	
IT	Italy	GSE	06	<ul style="list-style-type: none"> ▪ WGS 84 ▪ ED 50, time zone 32
<i>LT</i>	<i>Lithuania</i>	<i>Not appointed</i>	<i>27</i>	
LU	Luxembourg	ILR	36	<ul style="list-style-type: none"> ▪ WGS 84
<i>LV</i>	<i>Latvia</i>	<i>Not appointed</i>	<i>25</i>	
<i>MT</i>	<i>Malta</i>	<i>Not appointed</i>	<i>26</i>	

Domain		Member		Geographical map location coordinate standards
Code	Name	Name	Code	
NL	Netherlands	TenneT	07	<ul style="list-style-type: none"> ▪ On-shore: Rijksdriehoekskoördinaten (RD-coördinaten) ▪ Offshore: ETRS 89
NO	Norway	Statnett	08	<ul style="list-style-type: none"> ▪ WGS-84 ▪ MGRS (Military Grid Reference System) ▪ GIS database (Geographical Information systems)
<i>PL</i>	<i>Poland</i>	<i>Not appointed</i>	<i>18</i>	
PT	Portugal	REN	19	
SE	Sweden	Grexel	31	
SI	Slovenia	Energy Agency	17	<ul style="list-style-type: none"> ▪ Address of production units (street and house number)
<i>SK</i>	<i>Slovakia</i>	<i>Not appointed</i>	<i>20</i>	

Annex E
(normative)

Cogeneration GO codes

E.1 Uses of Heat

The predominant use of heat as stated in Recital (31) of the CHP Directive (2004/8/EC):

- a) heating, including district heating and cooling;
- b) industrial use, including process heating;
- c) agricultural use;
- d) production of biogas.

Annex F (normative)

Relevant perimeter

F.1 Hydraulic continuity principle

In case several production or pumping devices are linked through a hydraulic network, the considered perimeter shall be enlarged in order to include all relevant meters (principle of hydraulic continuity).

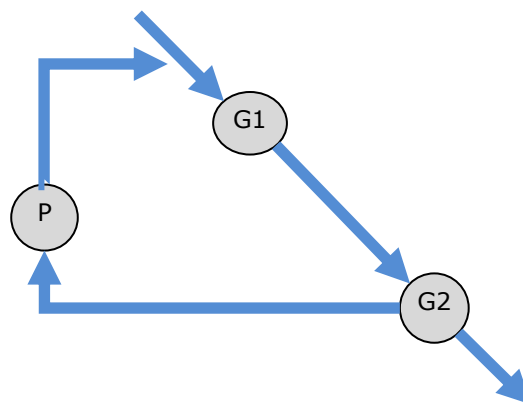


Figure F.1 — Hydraulic continuity principle

EXAMPLE G2 requests certificates. The hydraulic perimeter is $G1+G2+P$.

F.1.1 Extended hydraulic continuity principle

In case several production or pumping devices are linked through an electrical (sub)network, the considered perimeter shall be enlarged in order to include all relevant meters (extended hydraulic continuity principle).

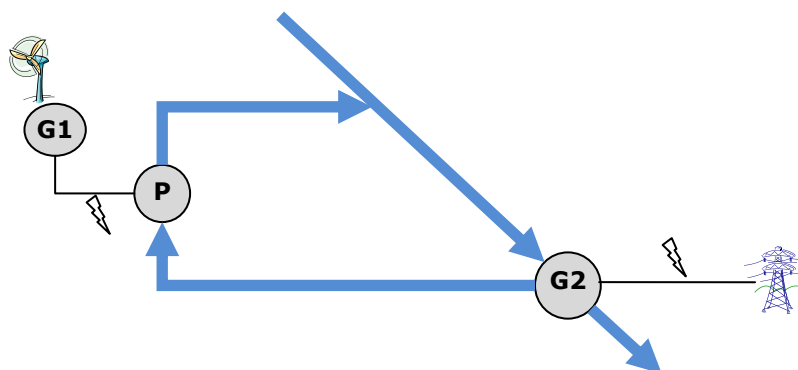


Figure F.2 — Extended hydraulic continuity principle

EXAMPLE A windmill supplies Electricity to pumps. The perimeter is G1+G2+P.

F.2 Smoothing of Electricity generation

The current rule that certificates should be Issued for generated Electricity still stands. Indeed, as long as regular measurements are provided, then what has been stored one day will be spent another day.

Moreover, the choice of any smoothing rule could be disputed, especially on grounds of double counting: variations in Electricity generation happen, and smoothing already happens because certificates can be used for relatively long periods. Besides, the smoothing in the Renewables Directive relates to target accounting, not Disclosure. Therefore, no smoothing of either generated or consumed Electricity should take place.

F.3 Electricity storage and conversion

Any Electricity that is stored in a medium other than Electricity (water potential energy, hydrogen etc.) will lose its attributes upon such conversion, unless certificates are Cancelled for the energy being converted - in which case an “Energy Input Factor” must be calculated.

When stored energy for which certificates have been Cancelled is converted back to Electricity, then this will have the same attributes as the original Electricity, as determined by the Energy Input Factor: either no attributes, or attributes set to “unknown”, will be awarded for Electricity not associated with the Energy Input Factor.

F.4 Alternative measures for a hydraulic plant

F.4.1 Certain flow

In case of complex hydraulic plants, it may sometimes be easier to Issue certificates based on the virtual Natural Flow, as this represents the “certain” flow: whatever the actual energy used or generated, it is certain that the flow of water between the higher and the lower altitudes would have been capable of generating a quantity of Electricity directly, depending on this altitude difference and on the characteristics of the plant. Certificates can always be Issued for this energy.

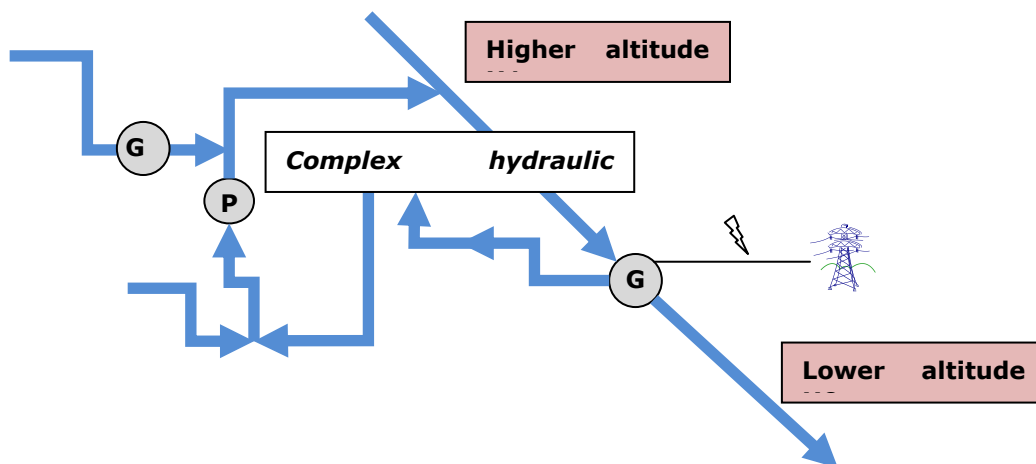


Figure F.3 — Complex hydraulic system

Hydro-Electricity is actually the potential energy of water converted into Electricity. The reverse is also true. Therefore, it is possible to calculate (reasonably accurately) the Electricity generated, based on measures of hydraulics.

The following is required:

- a) Difference in height between the highest point of Natural Flow and the generator;
- b) Generator yield; and
- c) Measured water flow.

The first two are readily available, since they are intrinsic to any hydraulic EGI. Measurements of the water flow are less common, but still quite possible.

F.4.2 Non-energy-based hydraulic systems

In case of hydraulic systems built for purposes other than Electricity generation, such as inland water transportation or the removal of waste water, there is consensus that any energy generated from such a system should be considered renewable.

Indeed, recovering some of the energy spent on such (non-energy purpose) hydraulics is good practice. Moreover, the installed power capacity of such systems is small or very small, especially when compared to the energy spent for the non-hydraulic purposes.

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- [2] DIRECTIVE 2009/28/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC
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- [4] Principles and Rules of Operation for the European Energy Certificate System (EECS)
- [5] E-track report